ABSTRACT OF THE DISCLOSURE

A flexible global distributed switch adapted for wide geographical coverage with an end-to-end capacity that scales to several Petabits per second (Pb/s), while providing grade-of-service and quality-of-service control, is constructed from packet-switching edge modules and channel-switching core modules. The global distributed switch may be used to form a global Internet. The global distributed switch enables simple controls, resulting in scalability and performance advantages due to a significant reduction in the mean number of hops in a path between two edge modules. Traffic is sorted at each ingress edge module according to egress edge module. At least one packet queue is dedicated to each egress edge module. Harmonious reconfiguration of edge modules and core modules is realized by time counter co-ordination. The global distributed switch can be enlarged from an initial capacity of a few Terabits per second to a capacity of several Petabits per second, and from regional to global coverage. It can accommodate connections to legacy systems, such as IP-based networks, and provide connections over one or two hops among distant legacy devices, such as routers.